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A NEW GENUS OF POECILOCHAETIDAE
(POLYCHAETOUS ANNELIDS) IN THE
MEDITERRANEAN: *ELICODASIA*
*MIRABILIS*¹

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In the framework of a general study of the benthic communities located on the continental shelf in the Bay of Rosas (on the Spanish Catalanian coast of the Mediterranean), several specimens of a new genus belonging to the small family Poecilochaetidae Hannerz, 1956 were recovered. The object of this study is to describe and classify this unusual organism in relation to the one genus already known in this family.

Genus *Elicodasia*, new genus

Diagnosis: Body long and slender, with numerous segments. Prostomium reduced with median antenna and pair of deciduous lateral palps; without eyes or nuchal organ. Tentacular segment with pair of tentacular cirri, without setae. First setigerous segment reduced, biramous, without dorsal and ventral cirri. Following segments all of same type, with biramous parapodia and dorsal and ventral cirri. Lateral sensory organs between rami. No branchiae. Notopodia with capillary setae and one or two pectinate setae. Neuropodia with capillary setae, large curved acicular setae (continue to posterior end) and one or two pectinate setae. Pygidium with ventral anus and three anal cirri—one mediodorsal and lateral pair. Smooth integument, with exception of head and pygidial regions; cirri and antenna furnished with cylindrical or hemispherical papillae. Proboscis well developed, unarmed.

Type-species: *Elicodasia mirabilis*, new species.

Etymology: *Elicodasia*, feminine gender, from the Greek *ελισ*, *ικος*, rolled in a spiral, and *δασυ*, *εια*, bushy, shaggy: an allusion to the

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pectinate setae and to the general distribution of the setae on the parapodia.

***Elicodasia mirabilis*, new species**

Material examined: All the specimens were recovered from the western Mediterranean in the Bay of Rosas on the Spanish Catalanian coast, between 50 and 185 meters depth: Sta. BR 40, 42° 13' 07"N, 3° 21' 05"E, 115 meters—anterior fragment of 44 segments, middle fragment of 35 segments; Sta. BV 149, 42° 03'N, 3° 15' 20"E, 145 meters—two anterior fragments of 28 and 41 segments, middle fragment of 15 segments; Sta. BR 61, 42° 04' 03"N, 3° 14' 02"E, 82 meters—anterior fragment of 25 segments; Sta. BR 82, 42° 21' 02"N, 3° 12' 02"E, 50 meters—posterior fragment of 37 segments, three middle fragments of 11, 12 and 14 segments; Sta. BR 37, 42° 10' 08"N, 3° 07' 08"E, 50 meters—posterior fragment of 36 segments; Sta. BR 60, 42° 04' 04"N, 3° 15' 05"E, 60 meters—middle fragment of 11 segments.

The anterior fragment of 41 segments from station BV 149 was chosen as the holotype and deposited in the collection of the Smithsonian Institution, Washington (U.S.A.) (USNM no. 49228). Other fragments are deposited in the authors collections.

Description: The longest anterior fragment was 11 mm long for 44 segments and 0.8 mm wide without cirri. Pigmentation is lacking. The segments are short and wide, with well-developed ventral and dorsal cirri. The integument of the body is smooth, with the exception of the tentacular segment, the prostomial antenna, the cirri, and the pygidial area, all of which have hemispherical papillae. The papillae have a subconical extension and are similar to the papillae of the Polynoidae or the Pilargidae, for instance.

The prostomium is small, hemispherical, with a well-developed median antenna inserted dorsally on the anterior part; the paired palps are missing but their position is indicated by scars between the prostomium and the inner borders of the tentacular segment (Fig. 1A, B). No trace of nuchal organ on the posterior part of the prostomium was observed. Lateral to the prostomium, the tentacular segment is formed of achaetous lobes covered with subconical papillae; each lobe bears a single tentacular cirrus, which is slightly longer than the median antenna (probably corresponds to the ventral tentacular cirrus of *Poecilochaetus* Claparède). The mouth is located ventrally in an oblique transverse plane, with the posterior lip located at the level of the fourth setigerous segment.

The first setigerous segment is small, biramous, with 0–1 notoseta and 1–3 neurosetae; dorsal and ventral cirri are lacking (Fig. 1A, B). The setae are all capillary. Beginning with the second setigerous segment, papillate spindle-shaped dorsal and ventral cirri are found (Fig. 2A, B). The parapodia are clearly biramous, both the noto- and neuropodia having numerous setae nearly encircling the bases of the dorsal and ventral cirri, their number increasing slightly towards the middle region of the body.

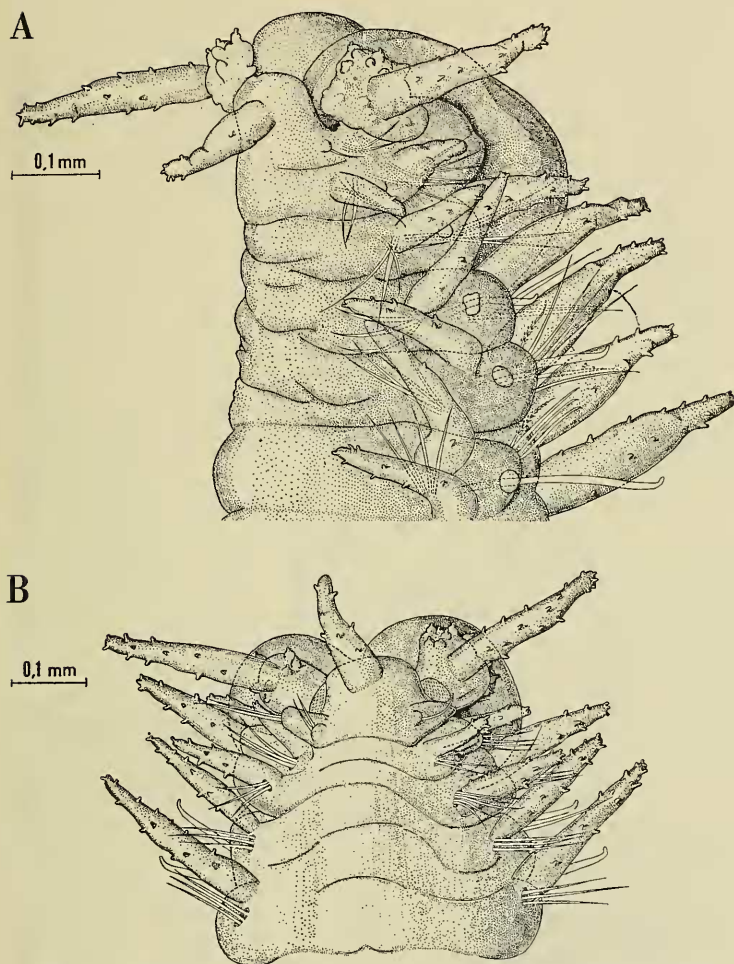


FIG. 1. *Elicodasia mirabilis*: A, anterior region, lateral view; B, same, dorsal view.

Internal acicula were not observed. On all segments, with the exception of the first setiger, there is a small globular papilla between the rami, similar to the lateral sense-organs of *Poecilochaetus*.

The notosetae include three types. Capillary notosetae, of variable thickness, are usually covered by thin spines, which are longer at the tips than at the bases of the setae; their tips are sharply tapered (Figs. 2A, 3B). There are 3-12, usually 6, capillary notosetae per ramus. The

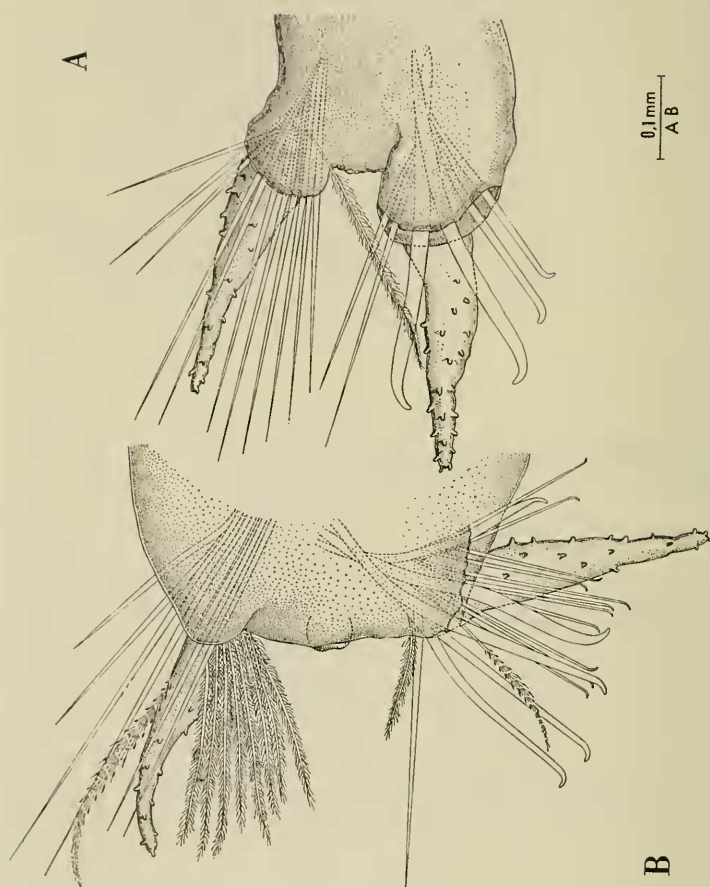


FIG. 2. *Elicodasia mirabilis*: A, parapodium from 35th setigerous segment; B, parapodium from middle region.

second type of notosetae appears on setiger 10 and continues posteriorly to the end of the body, 0–2 per ramus. These pectinate setae consist of a spirally rolled strip drawn out along the spiral axis, giving the illusion of a series of nested cones, with the outside edge of the strip furnished with thin spines (Figs. 2B, 3A). The entire seta is translucent and fairly difficult to see. The shape of the setae varies considerably according to where it is observed: there may exist a thick axial stem having the spines attached at its base and distributed in a fairly loose spiral, or the axial stem may be totally lacking. The existence of intermediate forms allows the conclusion that the setae in question are indeed of one unique type. The third type consists of fine capillary notosetae with very slender secondary filaments extending along their entire length (Fig. 3D). On the holotype, these plumose notosetae first appear on setiger 35; they continue to the posterior segments where they become more abundant (Fig. 2B).

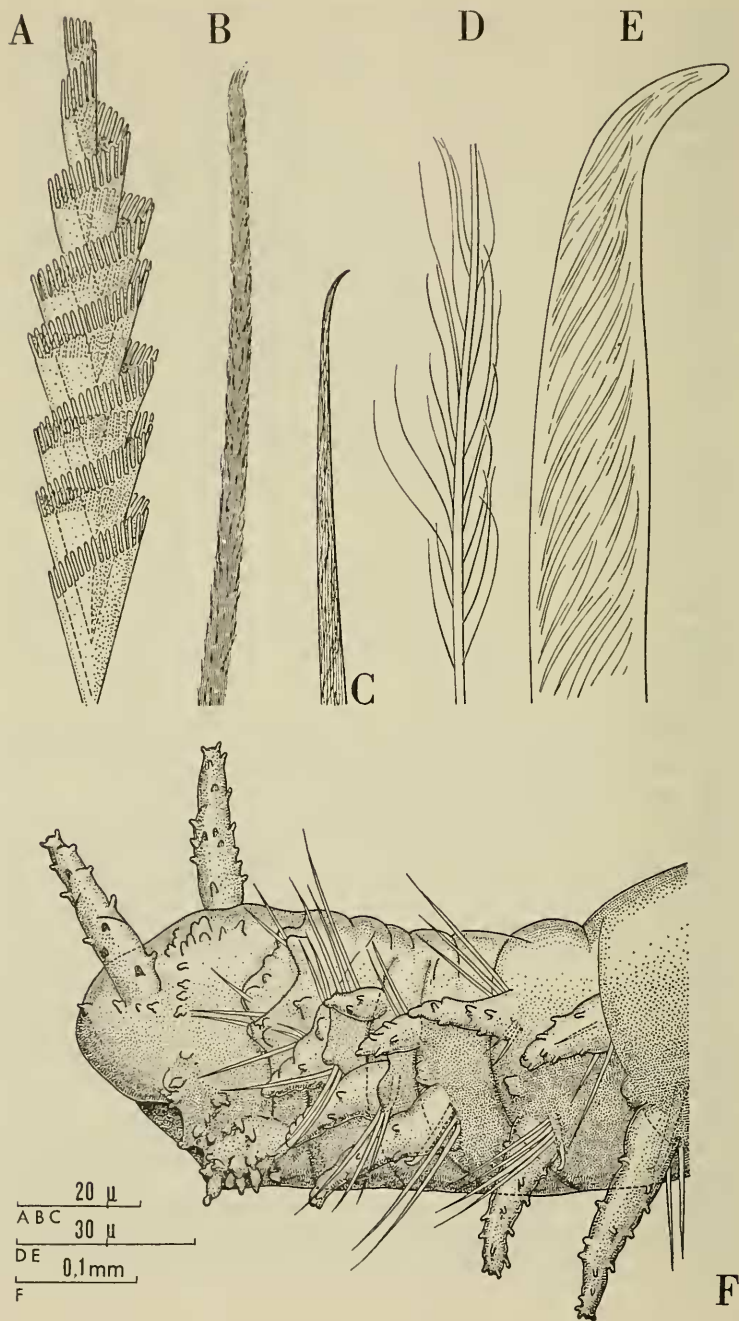
The neurosetae include the same three types as the notosetae, as well as two other kinds. Smooth acicular neurosetae with curved tips begin on setiger 3–4 and continue posteriorly (Figs. 2A, B; 3E). Smooth, very fine capillary neurosetae, terminating in short, slightly curved tips, are present on most of the segments.

It is difficult to verify the regularity of distribution of setae on the different segments; the pectinate setae are often missing, but their absence is not systematic but probably due to their extreme fragility. As in the case of the lateral sensory organ, the fact that we do not possess complete specimens will not permit us to affirm whether or not other types of setae may exist.

Branchiae are lacking, at least on the incomplete specimens examined. The posterior segments of the body are reduced and the pygidium has three anal cirri—two laterodorsal and one mediodorsal (Fig. 3F). The anus opens obliquely on the ventral side.

Discussion: The family position of *Elicodasia* has been particularly difficult to determine precisely. In reality, only the objective comparison of the parapod and of the diverse types of setae possessed by the organism with those of *Poecilochaetus* have permitted the parallel to be drawn between these two genera so that *Elicodasia* could be placed in the family Poecilochaetidae, up to now comprising the single genus *Poecilochaetus*. Among the most significant morphological criteria, we consider the lateral sensory organ, the pectinate setae, the filamentous capillary setae, and the neuropodial acicular setae. To our knowledge, these four structures are not found united in any other family of polychaetous annelids.

This conclusion reinforces the validity of the arguments used by Hannerz (1956) in justifying the creation of a particular family for *Poecilochaetus*. However, it now becomes necessary to modify the original family diagnosis. In reality, neither Hannerz nor the authors who have subsequently considered the family Poecilochaetidae and admitted its validity (Pettibone, 1963:308; Orrhage, 1964:389; Hart-



mann-Schröder, 1971:107) have furnished an actual family diagnosis except to infer that the diagnosis of Poecilochaetidae is synonymous with that of *Poecilochaetus*, the one known genus up to now.

The principal differences between the two genera are the following:

	<i>Elicodasia</i> new genus	<i>Poecilochaetus</i> Claparède
Prostomium:		
median antenna	Present	With frontal tentacle
nuchal organ	Absent	Well developed
Tentacular segment	Achaetous	With series of long setae extending anteriorly and forming a kind of cephalic cage
First setigerous segment	Reduced, without dorsal and ventral cirri	Well developed, similar to following segments, with dorsal and ventral cirri
Neuropodial acicular setae	Present in most of body (begin on segment 4 and continue posteriorly)	Confined to few anterior segments
Anus	Ventral	Dorsal

The genus *Poecilochaetus* is presently made up of 11 species and one subspecies. They are listed below, along with their type-localities:

- P. fulgoris* Claparède, 1875. Northeastern Atlantic, in 1326 meters.
P. serpens Allen, 1904. England, on the continental shelf.
P. tropicus Okuda, 1935. Palau, South Seas Islands.
P. johnsoni Hartman, 1939. Southern California.
P. vitjazi Levenstein, 1962. Tonga Trench, Abyssal Pacific, in more than 10,000 meters.
P. australis Nonato, 1963. Brazil.
P. bermudensis Hartman, 1965. Off Bermuda, in 1000 meters.
P. modestus Rullier, 1965. West Africa, in 82 meters.
P. japonicus Kitamori, 1965. Iyo Nada, Japan, in 5 to 20 meters.
P. paratropicus Gallardo, 1968. South Vietnam, in 9 to 42 meters.
P. vietnamita Gallardo, 1968. South Vietnam, in 19 meters.
P. serpens honiarae Gibbs, 1971. Solomon Islands.

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FIG. 3. *Elicodasia mirabilis*: A, pectinate seta; B, capillary seta; C, capillary neuroseta with curved tip; D, seta with secondary filaments; E, acicular neuroseta; F, posterior region and pygidium, lateral view.

The genus is remarkably homogeneous, but it should be emphasized that a number of these species are incompletely known, since their descriptions were based on fragmentary specimens. On the other hand, it is interesting to note that our knowledge of the group has increased rapidly during the last decade, the number of species having trebled. The majority of the species have been recovered in tropical or subtropical areas and in intertidal or relatively shallow depths. Three of them, however, are known from deep to abyssal depths (*P. fulgoris*, *P. bermudensis*, and *P. vitjazi*).

In the present state of our knowledge, the discovery of *Elicodasia* brings no new data regarding the position and phylogenetic relationships of the Poecilochaetidae. It also seems premature to attempt to establish the basis of a true family diagnosis from a comparison between the two genera. However, it is now possible to recall several characteristics which seem to belong to the family:

Preliminary emended diagnosis of Poecilochaetidae Hannerz, 1956.

Polychaetes having long and slender body formed by numerous segments. Prostomium small, subglobular, with median antenna or frontal tentacle and pair of long spioniform palps (easily deciduous). Peristomium or tentacular segment surrounding prostomium, with 1-2 pairs of tentacular cirri, with or without well-developed setae. Parapodia biramous, with lateral sense-organs between rami. Setae simple, of various kinds, including capillary, pectinate, plumose, and acicular. Dorsal and ventral cirri spindle-shaped or bottle-shaped. With or without branchiae. Pygidium with 3-4 anal cirri.

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